

Space Weather Forecast

Issued on Sunday, 21 November 2021 at 12:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: No Significant Activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Very Low over the last 24 hours, with no significant X-ray flare activity observed from either of the two small and stable sunspots regions on the Earth-facing Sun. There are two large filaments in the southern hemisphere of the Sun. These are lines of material held together by the Sun's magnetic fields, that can erupt to generate coronal mass ejections (CMEs), however both of these appear stable at the current time. No other Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind was Elevated to Strong through the period, reaching speeds of just under 700km/s. This is due to Earth moving through the faster solar winds that are coming from a coronal hole. Despite this speed, the interplanetary magnetic field carried by the wind was only weak with a brief period of moderate levels during the morning of the 21st. However, the important north-south component remained weak, with no significant period of southward (negative) pointing field. Consequently geomagnetic activity remained Quiet to Unsettled (Kp 2-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Very Low, with only a slight chance of C-class flares due to the two small and simple sunspots on the Earth-facing disc.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Earth's current interaction with the fast wind from a coronal hole on day 1 (21st) is expected to be the peak of activity for the period, with Quiet to Unsettled conditions, with periods of Active. This falling to mostly Quiet as the currently strong solar winds gradually subside through the period.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	10	5	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	1	1	1	1
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)